Mr. Miller, in speaking of *M. corneri*, says :—"The characters by which the fossil is distinguished from *M. sandayensis* are less apparent than those separating the two living Orkney species"; but if the analysis of the characters of the group given above be correct, it is precisely with *M. sandayensis* that our fossil has least to do.

LVI.—*The Fishes of the San Juan River, Colombia.*

By C. Tate Regan, M.A.

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Dr. H. G. F. Spurrell has recently made an excellent collection of fishes in the Condoto, a tributary of the San Juan, a river of the Pacific slope in S.W. Colombia, and has presented them to the British Museum. Three years ago a series of fishes from the San Juan and its tributaries, collected by Mr. G. Palmer, was acquired by the Museum. These collections are rich in novelties, and, except for a few species recently described by Eigenmann (Indiana Univ. Studies, 1912, no. 8), our knowledge of the fish-fauna of this river-system is based on them.

Characidæ.

1. *Lebiasina multimaculata*, Bouleng.

R. Condoto (*Palmer, Spurrell*).

2. *Piabucina aureoguttata*, Fowler.

R. Lisa and R. Tamana (*Palmer*).

3. *Brycon striatulus*, Kner.

R. San Juan (*Palmer*).

4. *Brycon oligolepis*, sp. n.

Depth of body 3 to $3\frac{1}{2}$ in the length, length of head $3\frac{1}{2}$ to $4\frac{1}{2}$. Snout nearly as long as or a little longer than diameter of eye, which is 3 to $4\frac{1}{3}$ in length of head; interorbital width $2\frac{1}{2}$ to 3. Maxillary extending to below anterior part or middle of eye; lower jaw shorter than upper. 13 or 14 gill-rakers on lower part of anterior arch. 44 to 48 scales in lateral line, 8 or $8\frac{1}{2}$ from origin of dorsal to lateral line,

3½ to 4½ thence to base of pelvics. Dorsal 11–12 ; origin behind base of pelvics ; longest ray about ⅔ length of head. Anal 29–32 ; origin below last rays of dorsal ; edge straight or slightly emarginate. Pectoral not or barely reaching pelvics, which sometimes reach anal. Silvery ; a black spot at base of caudal ; fins dusky, with paler edges.

Nine specimens, up to 220 mm. in total length, from the Rio Condoto (*Spurrell*) and Western Ecuador (*Rosenberg*).

B. moorei, Steind., from the Magdalena River, is near this species, but has more numerous scales. *B. atricaudatus*, Kner (*B. scapularis*, Fowler), from W. Ecuador, differs in the same respect and also in the larger head.

5. *Creagrutus leuciscus*, sp. n.

Depth of body 3 to 3⅓ in the length, length of head 3¾ to 4. Snout shorter than diameter of eye, which is 3 in length of head and nearly equal to interorbital width. Maxillary extending to below anterior ¼ of eye ; lower jaw the shorter. 10 gill-rakers on lower part of anterior arch. Lateral line complete, of 35 or 36 scales ; 4 or 4½ from origin of dorsal fin to lateral line, 3 thence to base of pelvic. Dorsal 10 ; origin above insertion of pelvics, nearer end of snout than base of caudal. Anal 14–15, emarginate. Pectoral not quite reaching pelvics, which extend to vent or origin of anal. Olivaceous ; a bluish-silvery lateral band ; no humeral or caudal spots ; fins immaculate.

Three specimens, 55 to 80 mm. in total length, from the R. Lisa (*Palmer*) and the R. Condoto (*Spurrell*).

Xenurocharax, gen. nov.

Near *Deuterodon*, differing in that a scaly flap extends on the caudal fin, covering a pocket opening downwards, ending in a large triangular scale carrying the lateral line nearly to the end of the middle caudal rays, and with its lower half marked with numerous vertical striations.

6. *Xenurocharax spurrellii*, sp. n.

Depth of body 3½ in the length, length of head 4½. Snout shorter than diameter of eye, which is 3 in length of head and equal to interorbital width. Teeth of outer series of præmaxillaries tricuspid, with weak lateral cusps, 2 teeth on one side, 3 on the other ; inner præmaxillary teeth with 3 strong cusps and sometimes an additional pair of cusps, 4 teeth on each side ; anterior mandibulary teeth similar to

and opposed to inner præmaxillary series, 4 on each side, the fourth considerably smaller than the others and leading to the small lateral teeth ; maxillary extending to below anterior $\frac{1}{4}$ of eye, proximally with 1 or 2 small teeth. Second suborbital completely covering cheek. 38 scales in lateral line, $5\frac{1}{2}$ from origin of dorsal to lateral line, 5 thence to base of pelvics. Dorsal 10 ; origin behind base of pelvics, slightly nearer end of snout than base of caudal. Anal 32 ; origin a little behind middle of dorsal ; a scaly sheath at its base ; third to fifth and ninth to thirteenth rays armed with series of hooks. Pectoral extending to pelvics, latter to origin of anal. Caudal forked. Olivaceous ; a bluish-silvery lateral band ; no humeral or caudal spots ; fins immaculate.

A single specimen, 57 mm. in total length, from the Condoto (*Spurrell*).

7. *Bryconamericus rubricauda*, sp. n.

Depth of body $2\frac{1}{2}$ to 3 in length, length of head $3\frac{1}{2}$ to 4. Snout shorter than diameter of eye, which is $2\frac{1}{4}$ to $2\frac{3}{4}$ in length of head, equal to or greater than interorbital width. Maxillary extending to below anterior $\frac{1}{3}$ of eye. Second suborbital covering cheek, its greatest width from $\frac{2}{3}$ to as long as eye. Scales 34 to 38 in lateral line, 5 or 6 from origin of dorsal to lateral line, 4 or 5 thence to base of pelvics. Dorsal 10–12 ; origin behind base of pelvics, equidistant from anterior part of eye and base of caudal ; longest ray a little shorter than head ; free edge straight or a little convex. Anal 30–33 ; origin below end of dorsal ; a scaly sheath at its base. Pectoral extending to pelvics, which reach origin of anal. Caudal scaly at base only. Olivaceous ; a bluish-silvery lateral band ending in a blackish caudal spot ; base of anal and proximal part of caudal lobes brilliant orange.

Eight specimens, 35 to 70 mm. in total length, from the Rio Condoto (*Palmer, Spurrell*).

8. *Bryconamericus juanensis*, sp. n.

Depth of body $2\frac{1}{2}$ to 3 in length, length of head 4 to $4\frac{1}{3}$. Snout shorter than diameter of eye, which is $2\frac{1}{2}$ to $2\frac{2}{3}$ in length of head, equal to or greater than interorbital width. Maxillary extending to below anterior margin or $\frac{1}{4}$ of eye. Second suborbital covering cheek, its greatest width $\frac{1}{2}$ to $\frac{2}{3}$ diameter of eye. Scales in lateral line 35 to 37, 6 or 7 from origin of dorsal to lateral line, 5 or 6 thence to base of pelvics. Dorsal 11 ; origin behind base of pelvics, nearly

equidistant from end of snout and base of caudal, longest ray as long as head; free edge straight. Anal 29–32; origin below or just behind end of dorsal; a scaly sheath at its base. Pectoral extending to pelvics, which reach vent. Caudal scaly at base only. Olivaceous; a bluish-silvery lateral band ending in a blackish caudal spot.

Ten specimens, 45 to 90 mm. in total length, from the Rio Condoto (*Spurrell*) and the Rio San Juan and Rio Tamana (*Palmer*).

This species has a larger eye and narrower suborbitals than the preceding and usually more scales in a transverse series. Both have the dentition characteristic of the genus, the præmaxillaries with an inner series of 4 teeth on each side and an outer series of 5, the second and fourth internal to the others.

9. *Bryconamericus scleroparius*, Regan.

R. San Juan (*Palmer*).

10. *Hyphessobrycon condotensis*, sp. n.

Depth of body $2\frac{1}{3}$ to $2\frac{2}{3}$ in length, length of head $3\frac{1}{2}$. Snout much shorter than diameter of eye, which is $2\frac{1}{4}$ in length of head; interorbital width 3. Maxillary extending to below anterior $\frac{1}{4}$ of eye; a naked space between second suborbital and præopercle. 33 to 35 scales in a longitudinal series, 10 to 15 in lateral line, 7 or 8 from origin of dorsal to lateral line, 5 or 6 thence to base of pelvics. Dorsal 11; origin nearly equidistant from end of snout and base of caudal; longest ray as long as head. Anal 28–30; origin below posterior part of dorsal; a distinct scaly sheath at base of anterior rays. Olivaceous; a dusky lateral stripe posteriorly; a vertically expanded dark humeral spot, a second dark spot behind it; no caudal spot; dorsal immaculate; base of anal and caudal lobes bright orange.

Several specimens, 30–40 mm. in total length, from the Rio Condoto (*Spurrell*) and the Rio San Juan (*Palmer*).

11. *Astyanax æneus*, Günth.

R. San Juan (*Palmer*).

12. *Nematobrycon palmeri*, Eigenm.

R. Condoto (*Palmer, Spurrell*); R. San Juan (*Palmer*).

13. *Gephyrocharax chocoensis*, Eigenm.

14. *Parastremma sadina*, Eigenm.

15. *Rœboides guatemalensis*, Günth.

R. San Juan (*Palmer*).

Gastropelecidæ.

16. *Thoracocharax brevis*, Eigenm.

R. San Juan (*Palmer*).

Xiphostomatidæ.

17. *Luciocharax striatus*, Boulenq.

R. San Juan (*Palmer*).

Anostomidæ.

18. *Curimatus lineopunctatus*, Boulenq.

R. Tamana (*Palmer*).

Sternarchidæ.

19. *Sternopygus æquilabiatus*, Humboldt.

R. Condoto (*Spurrell*).

Gymnotidæ.

20. *Gymnotus carapo*, Linn.

R Condoto (*Spurrell*).

Pimelodidæ.

21. *Pimelodella eutænia*, sp. n.

Depth about $5\frac{1}{2}$ in the length, length of head 4 to $4\frac{2}{3}$. Diameter of eye $3\frac{2}{3}$ to $4\frac{1}{4}$ in length of head, nearly equal to interorbital width. Head $1\frac{1}{3}$ as long as broad; snout a little longer than postorbital part of head; width of mouth $\frac{1}{2}$ width of head; maxillary barbel extending to middle of anal fin. Dorsal I 7; spine nearly smooth, $\frac{1}{2}$ to $\frac{2}{3}$ length of head; adipose fin $3\frac{1}{3}$ to $3\frac{1}{2}$ in length of fish. Anal 11–12. Pectoral spine $\frac{2}{3}$ length of head; inner edge weakly denticulated. Pelvics inserted behind dorsal, not reaching anal.

Caudal forked. Greyish; a strong blackish stripe from snout through eye to base of caudal fin; posterior half of each interradial membrane of dorsal dusky.

Five specimens, 75 to 145 mm. in total length, from the Rio Condoto (*Spurrell*) and the Rio Sipi (*Palmer*).

This species is related to *P. buckleyi*, Boulenger, from the Amazons of Ecuador, which has shorter barbels, a longer adipose fin, a different coloration, &c.

22. *Pimelodella grisea*, Regan.

R. San Juan (*Palmer*).

23. *Rhamdia wagneri*, Günth.

R. San Juan (*Palmer*).

NANNORHAMDIA, gen. nov.

Intermediate between *Rhamdia* and *Nannoglanis*, differing from the former in the absence of dorsal and pectoral spines, the vestigial occipital process, the more posterior position of the dorsal fin, and the shorter anal fin; from the latter in the less depressed head, the eyes lateral and with free margins, the dorsal fin above instead of behind the pelvics, the caudal forked instead of truncate.

24. *Nannorhamdia spurrellii*, sp. n.

Depth of body 6 in the length, length of head $4\frac{1}{2}$. Diameter of eye 2 in length of snout, 6 in length of head, $1\frac{1}{2}$ in interorbital width. Lower jaw the shorter. Maxillary barbel extending to end of pectoral fin. Dorsal 7; origin $\frac{1}{2}$ as distant from end of snout as from base of caudal; adipose fin as long as its distance from dorsal. Anal 9. Pectoral $\frac{4}{5}$ length of head, not reaching pelvics, which are inserted below middle of dorsal and do not nearly reach anal. Vent a short distance behind base of pelvics. Greyish; a dusky lateral stripe.

A single specimen, 70 mm. in total length, from the R. Condoto (*Spurrell*).

25. *Pseudopimelodus transmontanus*, sp. n.

Skin with papillæ or filaments, which are always evident above the pectorals. Depth of body $4\frac{1}{2}$ to 6 in the length, length of head 3 to $3\frac{1}{2}$. Head nearly as long as broad. Diameter of eye 12 to 18 in length of head, interocular width

2 to $2\frac{1}{2}$, length of snout 3 to $3\frac{2}{3}$. Jaws equal anteriorly; præmaxillary band of teeth with a pointed process at each end; maxillary barbel extending to operculum or basal part of pectoral. Occipital process separated by an interspace from basal bone of dorsal spine. Dorsal I 6; spine smooth, $\frac{1}{4}$ to $\frac{2}{5}$ length of head. Anal 10. Pectoral spine $\frac{1}{3}$ to $\frac{1}{2}$ length of head, serrated on both edges, the posterior teeth usually the stronger, in length not much less than the width of the spine; clavicular process short, its upper edge about equal to diameter of eye. Pelvics not reaching anal. Caudal rounded in adult, in young upper lobe produced and pointed. Adults uniformly dark greyish; young with a pale transverse bar from base of one pectoral fin to the other, a series of 4 pale spots along the back, respectively in front of and behind dorsal fin, on and behind adipose fin, and 3 larger pale spots along each side. Caudal with small dark spots, blackish at base and often crossed by a dark bar posteriorly; other fins either entirely blackish, or with a pale margin, or pale with a blackish bar.

Nine specimens, 60 to 250 mm. in total length, from the Condoto (*Spurrell*), the San Juan and the Tamana (*Palmer*), and the Durango, W. Ecuador (*Rosenberg*).

Related to *P. villosus*, Eigenm., from British Guiana.

Pygidiidæ.

26. *Pygidium unicolor*, sp. n.

Depth of body 7 in length, length of head 6. Head as broad as long. Diameter of eye 12 in length of head or 3 in interocular width; eyes well in advance of middle of head, close behind nostrils. Barbels as long as head. Dorsal 8–9, with 5 or 6 branched rays, rounded; origin above or a little in advance of vent, $1\frac{4}{5}$ as far from end of snout as from base of caudal. Anal 7, with 4 branched rays; origin below last rays of dorsal. Pectoral filament $\frac{4}{5}$ as long as head, branched rays $\frac{2}{3}$ length of head. Pelvics covering vent. Caudal subtruncate. Coloration uniform.

Two specimens, 80 and 85 mm. in total length, from the Condoto (*Spurrell*).

27. *Pygidium spilosoma*, sp. n.

Depth of body 7 to 8 in length, length of head 6 to $6\frac{3}{4}$. Head longer than broad. Diameter of eye 10 to 12 in length of head, $2\frac{1}{2}$ to 3 in interocular width; eyes very slightly in advance of middle of length of head, their distance from posterior nostrils $\frac{1}{6}$ or $\frac{1}{7}$ of length of head. Maxillary

barbel nearly as long as head, extending to basal part of pectoral. Dorsal 9, with 6 branched rays; free edge straight; origin a little in advance of vent, $1\frac{2}{3}$ as far from end of snout as from base of caudal. Anal 7, with 4 branched rays; origin a little behind end of dorsal. Pectoral filament as long as head, branched rays $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Caudal truncate or slightly emarginate. Yellowish, with dark brown spots on body and fins; young with a dark lateral band.

Three examples, 130 to 250 mm. in total length, from the Rio Sipi and Rio Tamana (*Palmer*).

28. *Pygidium tænia*, Kner.

R. Sipi and R. Tamana (*Palmer*).

Loricariidæ.

29. *Lasiancistrus caucanus*, Eigenm.

R. Condoto (*Spurrell*).

30. *Hemiancistrus mayoloi*, Eigenm.

31. *Hemiancistrus holostictus*, sp. n.

Depth of body $4\frac{1}{3}$ in the length, length of head $3\frac{1}{3}$. Head as broad as long, its depth $1\frac{2}{5}$ in its length, length of snout $1\frac{1}{8}$, diameter of eye 7, interorbital width $2\frac{2}{3}$. Length of barbel equal to that of mandibulary ramus or to diameter of eye. Interopercle freely movable, but with only 2 or 3 very short spines. Occipital plate with median ridge, bordered by a single scute; temporal plates keeled. Scutes keeled, 26 in a longitudinal series; abdomen in great part naked, scaly in front and at the sides. Dorsal I 7; base nearly as long as distance from caudal; first ray longer than head, reaching adipose fin when laid back; last nearly $\frac{1}{2}$ as long. Anal I 4. Pectoral spine extending to anterior $\frac{1}{4}$ of pelvics. Caudal emarginate. Caudal peduncle nearly 3 times as long as deep. Head, body, and fins covered with round dark spots.

A single specimen, 180 mm. in total length.

This species is near *H. annectens*, Regan, from Western Ecuador, but differs in the deeper form, the larger dorsal fin, the very small interopercular spines, &c.

32. *Pseudancistrus setosus*, Boulenger.

R. Tamana (*Palmer*).

33. *Chætostomus palmeri,* Regan.

R. Tamana (*Palmer*).

34. *Chætostomus lepturus,* Regan.

R. Tamana (*Palmer*); R. Condoto (*Spurrell*).

35. *Chætostomus paucispinis*, Regan.

R. San Juan (*Palmer*).

36. *Chætostomus marginatus*, Regan.

R. Condoto (*Spurrell*).

37. *Ancistrus centrolepis,* sp. n.

Depth of body 5 in the length, length of head $2\frac{4}{5}$. Breadth of head $1\frac{1}{6}$ in its length, depth 2, length of snout 2, diameter of eye 7 to 8, interorbital width 2. Length of mandibular ramus $3\frac{1}{3}$ to $3\frac{1}{2}$ in interorbital width. Snout with tentacles, its upper surface nearly covered with bony plates, leaving only a narrow naked margin (♀). Interoperculum with 10 or 12 spines; longest nearly $\frac{2}{9}$ length of head. 24 scutes in a longitudinal series; lateral scutes with the middle 2 or 3 series of spinules enlarged, ending in quite strong spines at the posterior edge of each scute. Dorsal I 7; base as long as its distance from tip of spine of adipose fin; first ray $\frac{4}{5}$ or $\frac{5}{6}$ length of head, last reaching adipose fin when laid back. Anal I 4. Pectoral spine reaching anterior $\frac{1}{3}$ or middle of pelvics. Caudal obliquely truncate. Caudal peduncle $2\frac{1}{4}$ to $2\frac{1}{2}$ as long as deep. Uniformly blackish.

Two specimens (♀), 150 and 195 mm. in total length, the larger from Choco, R. San Juan (*Palmer*).

This species is near *A. hoplogenys,* differing in the structure of the scutes and the narrower naked margin of the snout.

38. *Loricaria magdalenæ,* Steind.

R. San Juan (*Palmer*); R. Condoto (*Spurrell*).

39. *Sturisoma tamanæ*, Regan.

R. Tamana (*Palmer*); R. Condoto (*Spurrell*).

40. *Sturisoma panamensis,* Eigenm.

R. San Juan (*Palmer*); R. Condoto (*Spurrell*).

41. *Cyclopium cirratum*, Regan.

R. Condoto (*Palmer*).

42. *Cyclopium ventrale*, Eigenm.

Probably a synonym of *C. cirratum*.

Pœciliidæ.

43. *Rivulus elegans*, Steind.

R. Condoto (*Palmer, Spurrell*).

44. *Gambusia nigroventralis*, Eigenm.

Perhaps a synonym of *G. episcopi*, Steind.

45. *Gambusia caudovittata*, sp. n.

Depth of body equal to length of head, 4 in length of fish. Diameter of eye 3 in length of head, interorbital width $2\frac{1}{2}$. Mouth small; an outer series of strong curved conical teeth especially prominent in upper jaw. Dorsal 8; origin equidistant from posterior part of eye and base of caudal. Anal 9; origin a little in advance of dorsal. Pectoral $\frac{4}{5}$ length of head. Caudal rounded. 30 scales in a longitudinal series. Olivaceous; a dusky bar across posterior part of caudal.

One specimen, a female, 25 mm. in total length, from the Rio Condoto (*Spurrell*).

Belonidæ.

46. *Belone fluviatilis*, Regan.

R. Condoto (*Spurrell*).

Cichlidæ.

47. *Cichlosoma* (*Æquidens*) *cæruleopunctatum*, Kner & Steind.

R. Condoto and R. Tamana (*Palmer*).

48. *Cichlosoma* (*Æquidens*) *biseriatum*, sp. n.

Depth of body $2\frac{1}{4}$ to $2\frac{1}{2}$ in the length, length of head $2\frac{2}{3}$ to 3. Snout as long as or shorter than diameter of eye, which is 3 to $3\frac{1}{4}$ in length of head and about equal to interorbital width. Jaws equal anteriorly; maxillary extending

to below anterior margin of eye ; depth of præorbital $\frac{1}{2}$ to $\frac{3}{5}$ diameter of eye; cheek with only 2 series of scales, rarely a third series of 2 to 4 scales running upwards and backwards from behind angle of mouth to below eye ; præopercle scaleless ; 5 or 6 gill-rakers on lower part of anterior arch. 23 to 26 scales in a longitudinal series, 3 from first dorsal spine and 1 or $1\frac{1}{2}$ from first soft ray to lateral line, 8 rows below lateral line. Dorsal XV 9–10; fifth to twelfth spines subequal, $\frac{1}{3}$ length of head; last spine $\frac{2}{5}$ length of head; soft fin pointed, extending to anterior part or middle of caudal. Anal III 7–8. Dorsal and anal scaleless. Pectoral nearly as long as head, extending to origin of anal; pelvics reaching anal. Caudal rounded. Caudal peduncle $\frac{1}{2}$ to $\frac{2}{3}$ as long as deep. Uniformly dark or with dark longitudinal stripes or series of spots along the rows of scales; paler specimens with cross-bars, a lateral blotch, and a small spot at base of caudal; a blackish spot or ocellus on dorsal fin between tenth and twelfth spines : often another in front of and another behind it; dorsal with pale edge and dark intramarginal stripe; soft dorsal spotted; lower fins dark-edged.

Seven specimens, the largest 80 mm. in total length, from the Rio Condoto (*Spurrell*).

49. *Cichlosoma* (*Parapetenia*) *atromaculatum*, Regan.

R. Condoto (*Palmer, Spurrell*) and R. San Juan (*Palmer*).

50. *Geophagus pellegrini*, Regan.

R. San Juan (*Palmer*); R. Condoto (*Spurrell*).

Atherinidæ.

51. *Thyrina guatemalensis*, Günth.

R. Condoto (*Spurrell*).

Gobiidæ.

52. *Philypnus maculatus*, Günth.

R. San Juan (*Palmer*).

53. *Eleotris picta*, Kner & Steind.

R. San Juan (*Palmer*).

54. *Chonophorus transandeanus*, Günth.

R. Condoto (*Spurrell*).

Symbranchidæ.

55. *Symbranchus marmoratus*, Bloch.

R. Condoto (*Spurrell*).

LVII.—*On the Shells known as* Gemma, Parastarte, *and* Psephidia. By A. J. Jukes-Browne, B.A., F.R.S.

These small shells are aberrant members of the Veneridæ, which have sometimes been regarded as independent genera and sometimes as subgenera of *Venus* or *Chione*. A recent examination of specimens under the microscope has disclosed the fact that several mistakes have been made with regard to their internal characters, and has also revealed some features which seem to have escaped notice. I propose, therefore, to give a more complete and accurate account of these shells, and to indicate a species which has been referred to *Psephidia* (=*Psephis*), but which differs in so many particulars that it must be regarded as a distinct subgenus, and, as such, must receive a new name.

1. Gemma, Deshayes.

This little shell was first described as *Venus gemma* by J. S. Totten in 1834 *, and was for a long time supposed to have only two teeth in the right valve, all the text-books copying Deshayes's erroneous statement to that effect, although it is quite clear that Totten and other American conchologists knew quite well that there were three teeth in each valve.

The three teeth of the right valve are fairly well shown in Totten's figure, and he described the dentition as follows:—"Teeth divergent, the medial tooth of each valve stout and triangular, the anterior tooth of the right and the posterior of the left valve thin and not easily recognized." The shell was accepted as a *Venus* by Gould in 1841 †, who described

* 'American Journal of Science,' vol. xxvi. p. 366 (New York, 1834).
† Report on Invert. of Massachusetts, p. 88, fig. 51.